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Director's Message

Welcome to the first issue of the PIER Demand Response Research Center's newsletter. The last few years have seen some exciting conceptual and technological developments that are helping to move

demand response (DR) closer to widespread use in California. Demand response can be defined as short-term modifications in customer end-use electric loads in response to dynamic price and reliability information.

Demand response has been identified as an important element of the State of California's energy policies. The research conducted by the Demand Response Research Center (DRRC) is playing a substantive role in moving DR toward market acceptance. The California Energy Commission's Public Interest Energy Research (PIER) Program supports energy research, development and demonstration (RD&D) projects. The Energy Commission created the DRRC in 2004 to develop, prioritize, conduct, and disseminate research that develops broad knowledge with the aim of facilitating the near-term adoption of DR technologies, policies, programs, strategies and practices, while ensuring that the research continues to be connected with the DR market and policy makers through substantial stakeholder input. Key stakeholders in the Center include system developers, aggregators,

program implementers, utilities, industry trade associations, state policy makers, researchers, building owners, engineers and operators, building equipment manufacturers, and other end-use customers.

DRRC research results are being published in a wide variety of arenas, and new DR research opportunities are becoming available. We hope that you will join us by keeping informed about the Center's work, responding to requests for proposals if you are a researcher in this field, and contacting us if you are an owner or manager interested in using demand response in your facility.

The DRRC newsletter will report on current demand response research, recent publications available at the Center website, and include notices about upcoming meetings and workshops related to demand response. Go to drcc.lbl.gov and click on the "Email notification" link to sign up for e-mail delivery of this newsletter as well as other updates about the Center's work and activities.

We look forward to your participation in the Center's work and the furthering of demand response technologies.

—Mary Ann Piette, Research Director

Calendar (See Page 2 for details)**April 19th – 21st**

14th National Conference
on Building Commissioning
San Francisco

May 16th

Manual and Automated
Demand Response and
Critical Peak Pricing
Strategies Class
San Francisco

June 26th – 27th

DRRC/DRCC
National Town Meeting
and Demand Response
Symposium
Berkeley

About the DRRC

The Demand Response Research Center is operated by Lawrence Berkeley National Laboratory for the California Energy Commission's Public Interest Energy Research Program (PIER).

National Town Meeting and Demand Response Symposium

June 26th-27th — Berkeley, California

Mark your calendar and save the date. The Demand Response Research Center (DRRC) and Demand Response Coordinating Committee (DRCC) have joined together to host a two-day “*National Town Meeting and Demand Response Symposium*” in Berkeley, California on June 26th and 27th, 2006.

The *Demand Response Symposium* on June 26th will feature case study oriented concurrent panel discussions on rates and pricing, customer acceptance, metering and advanced control technologies for commercial as well as residential customers. Sessions will feature advanced programs and focus on results, policy implications and industry research needs.

On June 27th the *National Town Meeting on Demand Response III* will continue to examine policy related demand response issues at national and state levels. Panel sessions with key regulators, commission staff, utility practitioners and consumer advocates will revisit the myths, barriers and opportunities for demand response.

More information regarding the *National Town Meeting and Demand Response Symposium* can be obtained by contacting Roger Levy with the DRRC at (916) 487-0227 [RogerL47@aol.com] or Dan Delurey with the DRCC [www.demandresponsetownmeeting.com]. Conference details will also be posted at drr.lbl.gov.

Manual and Automated Demand Response and Critical Peak Pricing Strategies Class

May 16th – Pacific Energy Center, San Francisco

9:00 a.m. – 4:30 p.m.
Pacific Energy Center, San Francisco
(same-day on-line course also available)

Mary Ann Piette and Dave Watson, DRRC

This course will cover manual strategies along with new “Automated Demand Response” activities in which electric loads are shed automatically based on a remote signal. Automated Demand Response will be available for PG&E customers through the Critical Peak Pricing Program. Topics covered include:

- The 2003, 2004 and 2005 Auto-DR and Auto-CPP field test results.
- Case study information from over 25 buildings organized by end-use and building type.
- Reasons for using demand responsive systems and the various technologies used to implement these systems.

The course is intended for system developers, aggregators, program implementers, utilities, state policy makers, researchers, building owners, engineers, and operators, building equipment manufacturers, and other end-use customers.

14th National Conference on Building Commissioning

April 19th – 21st — The Fairmont, San Francisco

Mary Ann Piette, DRRC Research Director, will present the Automated Demand Response Presentation at the Thursday, April 20th Breakfast Session (7:30 – 830 a.m.).

For more information, go to:
<http://www.peci.org/ncbc/ncbc.htm>

Auto-DR Successful

Large Commercial Buildings Reduce Electrical Loads by up to 30%

Large commercial buildings have often been viewed as strong candidates for demand response (DR). A few large commercial facilities often account for a disproportionate share of the system load. Experience has shown that lighting, heating, ventilation and air conditioning (HVAC), and other facility loads often can be temporarily shifted, limited, or shed in order to reduce demand at critical times without minimally impacting building operations or tenant comfort.

DR program success has been difficult to achieve or sustain because of the complexity of managing multiple, complex building systems. While problems start with determining how to notify a building manager of a pending event, how the manager responds to that event poses even more problems. Manually turning loads on or off and changing set points is labor-intensive and costly. Manual control can also produce inconsistent results from one event to the next, and create adverse customer impacts in the process. A better, more automated way to manage facility load and demand response is needed.

Automated Demand Response or Auto-DR, a research program managed by the Demand Response Research Center (DRRC), is designed to link facility energy management control systems (EMCS) with external utility-generated price or emergency signals. The signals initiate pre-programmed, customer-defined strategies

to shift, reduce or shed loads for brief periods of time. Pre-defining and automating the customer response through the facility's EMCS can substantially reduce cost and complexity and provide a more consistent and reliable demand response. Auto-DR also provides facility managers with a valuable feature not included in many DR options—the ability to “opt out” or “override” a DR event if it comes at a time when the reduction in end-use services is not desirable.

A report titled “*Findings from the 2004 Fully Automated Demand Response Tests in Large Facilities*” (LBL-58178) is now available. Released in September 2005, it describes the results of the second season of research to develop and evaluate the performance of new Automated Demand Response (Auto-DR) hardware and software technology in large commercial facilities. The overall goal is to support increased penetration of DR through the use of automation, better understanding of DR technologies and customer-driven response strategies.

How Does Auto-DR Work?

Auto-DR provides a price or activation signal through an interface directly to the commercial facility's EMCS. Two options for interfacing with an EMCS were identified for the first and second year's tests: (1) a software-based Internet gateway and (2) a low cost hardware-based Internet relay.

Many retails and other multi-site organizations use Internet gateways to communicate with their buildings. Internet gateways use the Internet Communication Protocol (TCP/IP) to customize their connection to the EMCS. Unfortunately, not all EMCS provide Internet gateways and those that do don't provide standardized interfaces. Consequently, the TCP/IP link for gateway-equipped EMCS has to be programmed by the customer for each system, which can often be a complex, costly process.

To overcome this problem, the DRRC provided test participants with a low cost Internet relay. The Internet relay provides the EMCS with a contact closure that can be activated remotely

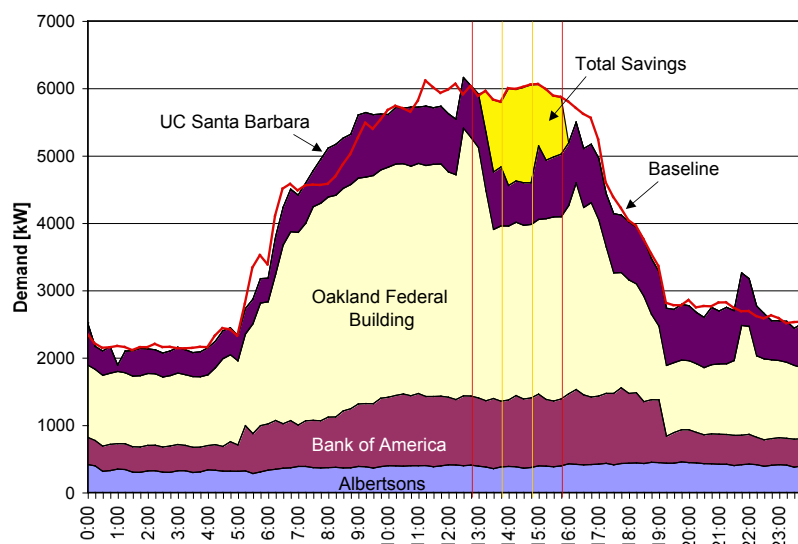


Figure 1. Aggregated demand savings for five buildings, September 8, 2004

Auto-DR Successful

Continued from page 3

over a LAN, WAN or the Internet using standardized Internet protocols (IP). Internet relays can be used to communicate with any commercial building's EMCS if the building has a connection to the Internet.

Figure 2 illustrates both the gateway and relay configurations used during the Auto-DR field trials.

Results From Field Trials

In the tests, the DRRC price server depicted in Figure 2 acted as a proxy for a utility or ISO message unit. For the first two test-years, the DRRC price server used fictitious electricity price signals that mimicked a critical peak price or rate (CPP), to automatically activate customer programmed DR strategies. For the 2005 third-year test, the DRRC provided real prices for PG&E customers enrolled on an actual CPP rate.

During Auto-DR events, facilities are encouraged to shift, limit or shed loads to avoid high-cost peak period charges. Based on the rate incentives, facilities may also be encouraged to shift load to lower-cost off-peak time periods. Pre-cooling is one example of shifting loads.

Over three years of testing, the DRRC research team was successful in recruiting, configuring and testing Auto-DR strategies on more than 10 million square feet of facility floor space. During 2003, tests were conducted on five large commercial facilities. The 2003 tests were conducted in November, during mild weather. The test achieved a shed of nearly 10 % from the 5 MW demand under control among the five building. A late summer test achieved a maximum savings of nearly 1.5 MW, or about 24% of the total load for all five sites. No complaints were registered as a result of these large reductions.

In 2004 the test group expanded to 18 sites, including a total of 36 buildings. Maximum savings per site reached 1.8 watts per square foot with an average peak load reduction of 0.5 watts per square foot, which was

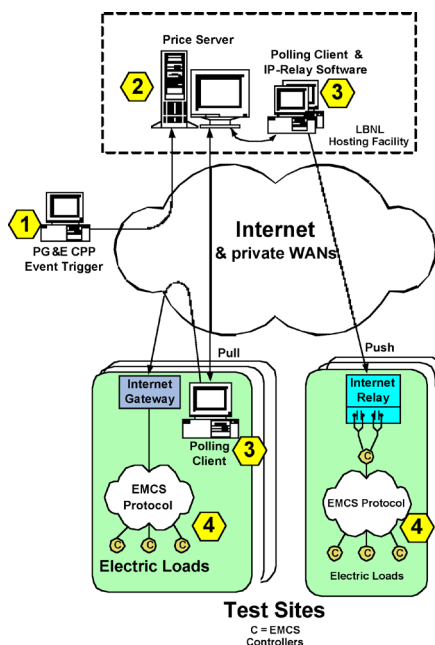


Figure 2. Auto-DR communication configurations

equivalent to 7% of the average building load. Overall, the participating facilities' Auto-DR strategies yielded peak demand reductions that ranged from a few percent over 30% of total building load.

According to DRRC researchers, the largest savings were observed from strategies that used cooling zone set point increases, although lighting, anti-sweat heaters and other HVAC strategies also contributed.

After three years of successful tests, DRRC researchers observed that automating DR is likely to foster greater participation in various markets. Automation decreases the time needed to prepare for an event, increases the number of

times a facility may be willing to shed loads, and perhaps improves the size of the DR response. ■

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Copies of the Auto-DR reports can be obtained from the DRRC Automated Demand Response Project's publications web page (<http://drcc.lbl.gov/drcc-pubs1.html>):

Findings from the 2004 Fully Automated Demand Response Tests in Large Facilities

Piette, M.A., D.S. Watson, N. Motegi, and N. Bourassa, Lawrence Berkeley National Laboratory. LBNL-58178. September 2005.

Development and Evaluation of Fully Automated Demand Response in Large Facilities

Piette, M. A., O. Sezgen, D. Watson, N. Motegi, (Lawrence Berkeley National Laboratory), C. Shockman (Shockman Consulting), L. ten Hope (Program Manager, Energy Systems Integration CEC). CEC-500-2005-013. January 2005

In the next issue: *Auto-DR Case Studies: Strategies for Responding to Pricing and Emergency Events.*

Real-Time Pricing

Reports Describe U.S. Experience— Outline California Policy Recommendations

Two new research reports for the California Energy Commission Public Interest Energy Research program provide results from a multi-year study of customer response to real-time pricing (RTP). Coordinated through the Demand Response Research Center (DRRC), the reports by the Department of Energy's Lawrence Berkeley National Laboratory and Neenan Associates discuss utility and customer experience with a variety of real-time pricing options and the potential implications they hold for California policy makers.

The report provides nine key findings regarding the DR impacts of RTP. It also identifies policy implications for RTP in both competitive and regulated retail markets.

"Customer Strategies for Responding to Day-Ahead Market Hourly Electricity Pricing," released in July 2005, provides an in-depth review and analysis of how non-residential customers responded to the default RTP tariff adopted by Niagara Mohawk Power Corporation in 1998. Niagara Mohawk customers can purchase their electric

Table 1. RTP Case Study Participants

State *	Retail Access	Year Implemented		Eligible Peak Load (MW)	Participating Load (%)
		Optional	Default		
Georgia	>900kW	1992	-	6100	5050 (83%)
Illinois	yes	1998	2006	2500	NA
Maryland	yes	2004	2005	2383	NA
New York (Niagra Mohawk)	yes	-	1998	545	183 (34%)
New Jersey	yes	2003	2003	2920	461 (16%)
Ohio	Yes	2003	2005	NA	NA
Oregon	Non-Res	2004	-	400	25 (6%)
Pennsylvania	yes	-	2005	1050	35 (3%)

* Summarized from Table ES-1 and 4-7, "Real Time Pricing as a Default or Optional Service for C&I Customers: A Comparative Analysis of Eight Case Studies", August 2005.

"Real-Time Pricing as a Default or Optional Service for C&I Customers: A Comparative Analysis of Eight Case Studies," released in August 2005, looked at customer experience with optional and default RTP in eight states (Table 1). The state focused case studies included multiple utilities, with optional and default RTP options, with the earliest implemented by Georgia Power in 1992.

RTP is often considered a vehicle for demand response (DR). However, the report observes that the primary policy objective guiding these initiatives was a desire to better link wholesale and retail prices to foster market development. While the report surveys the DR impacts of RTP, it also states that, for at least five of the initiatives, "DR was at most a secondary objective". In contrast, the report observes that both the New York and Oregon tariffs were developed as part of a resource planning effort where the potential RTP DR impacts were a key objective.

commodity from a competitive provider. They also have opportunities to purchase financial hedging products to offset the risk associated with hourly pricing. According to the report, the population exposed to RTP was split between industrial (30%), commercial (25%), and institutional (45%) customers.

The report provides many observations regarding customer responsiveness, particularly with regard to the interaction between day-ahead RTP and New York ISO emergency demand response programs (ERDP). The report finds that for many customers, notification and the

"...for many customers, notification and the opportunity to pro-actively address emergencies are more important than cost savings..."

Real-time Pricing

Continued from page 5

Table 2. Elasticity of Substitution Results

Business Category	Customer Population (N)	Average Substitution Elasticity
Government – Education	34	0.10
Public Works	17	0.02
Commercial – Retail	16	0.06
Healthcare	8	0.04
Manufacturing	44	0.16
Total	119	0.11

opportunity to pro-actively address emergencies are more important than cost savings.

Numerous policy implications are provided regarding tariff design, the need for education, technical support, and ways to address barriers that may be constraining customer response.

¹“Real Time Pricing as a Default or Optional Service for C&I Customers: A Comparative Analysis of Eight Case Studies”, [LBNL-57661], Lawrence Berkeley National Laboratory and Neenan Associates, August 2005, p. xiii.

²ibid

³“Customer Strategies for Responding to Day-Ahead Market Hourly Electricity Pricing”, [LBNL-57128], Lawrence Berkeley National Laboratory and Neenan Associates, July 2005, p. xii. ■

■ Chuck Goldman, cagoldman@lbl.gov

Copies of both reports can be obtained from the Program and Tariff Analysis Projects publications page [<http://drcc.lbl.gov/drcc-pubs2.html>].

Real Time Pricing as a Default or Optional Service for C&I Customers: A Comparative Analysis of Eight Case Studies, Barbose, G., C. Goldman, R. Bhavirkar, N. Hopper, and M. Ting, Lawrence Berkeley National Laboratory; and B. Neenan, Neenan Associates. LBNL-57661. August 2005.

Customer Strategies for Responding to Day-Ahead Market Hourly Electricity Pricing, Goldman, C., N. Hopper and R. Bhavirkar, Lawrence Berkeley National Laboratory; and B. Neenan, R. Boisvert, P. Cappers, D. Pratt, and K. Butkins, Neenan Associates. LBNL-57128. August 2005.

DRRC Publications

DRRC publications and presentations are available on the drcc.lbl.gov website by accessing the publications menu at <http://drcc.lbl.gov/drcc-pubsall.html>. DRRC reports to date include:

Demand Shifting With Thermal Mass in Large Commercial Buildings: Field Tests, Simulations and Audits.

Xu, P., P. Haves and M.A. Piette (Lawrence Berkeley National Laboratory) and L. Zagreus (University of California at Berkeley). LBNL-58815. January 2006.

Findings from the 2004 Fully Automated Demand Response Tests in Large Facilities.

Piette, M.A., D.S. Watson, N. Motegi, and N. Bourassa, Lawrence Berkeley National Laboratory. LBNL-58178. September 2005.

Customer Strategies for Responding to Day-Ahead Market Hourly Electricity Pricing.

Goldman, C., N. Hopper and R. Bhavirkar, Lawrence Berkeley National Laboratory; and B. Neenan, R. Boisvert, P. Cappers, D. Pratt, and K. Butkins, Neenan Associates. LBNL-57128. August 2005

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Development and Evaluation of Fully Automated Demand Response in Large Facilities.

Piette, M. A., O. Sezgen, D. Watson, N. Motegi, (Lawrence Berkeley National Laboratory), C. Shockman (Shockman Consulting), L. ten Hope (Program Manager, Energy Systems Integration CEC). CEC-500-2005-013. January 2005

DRRC Initiates Critical Research Projects

Establish the Value of Demand Response

In October 2005, the Demand Response Research Center (DRRC) awarded contracts to Energy and Environmental Economics, Inc. (E3) and Summit Blue Consulting for Phase 1 of a two-phase research effort to “*Establish the Value of Demand Response*.” Both firms will perform the same set of tasks and essentially compete to see which firm moves on to the Phase 2 methodology development effort. This research project will establish a new, more comprehensive framework to evaluate demand response (DR). It will also identify and develop a more inclusive and robust DR valuation methodology.

Since the late 1970s, the value of demand response (DR) in California has been determined by a Standard Practice Methodology (SPM). The multi-part SPM uses a gas-fired peaker proxy and present value analysis of DR costs and benefits to evaluate the value of program- and rate-induced load impacts. Although originally designed to establish generation equivalence for DR, the SPM has for the last 25 years been the accepted methodology for evaluating all utility and regulatory DR initiatives.

There is now a general consensus that the existing SPM evaluation framework improperly captures and reflects the appropriate DR value. The SPM only addresses static, readily quantifiable energy costs and benefits. Customer, environmental, societal, risk, information, opportunity and other difficult-to-quantify costs and benefits are excluded entirely.

At the conceptual level, this DRRC research effort will initiate a comprehensive evaluation to better understand the value DR contributes to the utility, customer, and broader interconnected electric network. Looking beyond traditional perspectives this research effort is expected to address these difficult-to-quantify costs and benefits. Establishing metrics or other measures to value the

components of DR, and developing methodologies to support utility and regulatory decision processes is included in this research effort. Finally, this research is expected to take a new look at the customer perspective of DR, where DR is integrated on a policy and standards level with efficiency and conservation as part of the basic customer service package, rather than a series of independent reliability and price-responsive programs.

A more comprehensive discussion of the issues and objectives for this project can be found in an issue paper included in the Research Opportunity Notice used as the basis for the competitive proposal process. A copy of this issue paper, titled “*Establish the Value of Demand Response: Develop an Integrated Efficiency/Demand Response Framework*” can be found on the DRRC web site at http://drcc.lbl.gov/pubs/drcc-01_final.pdf. ■

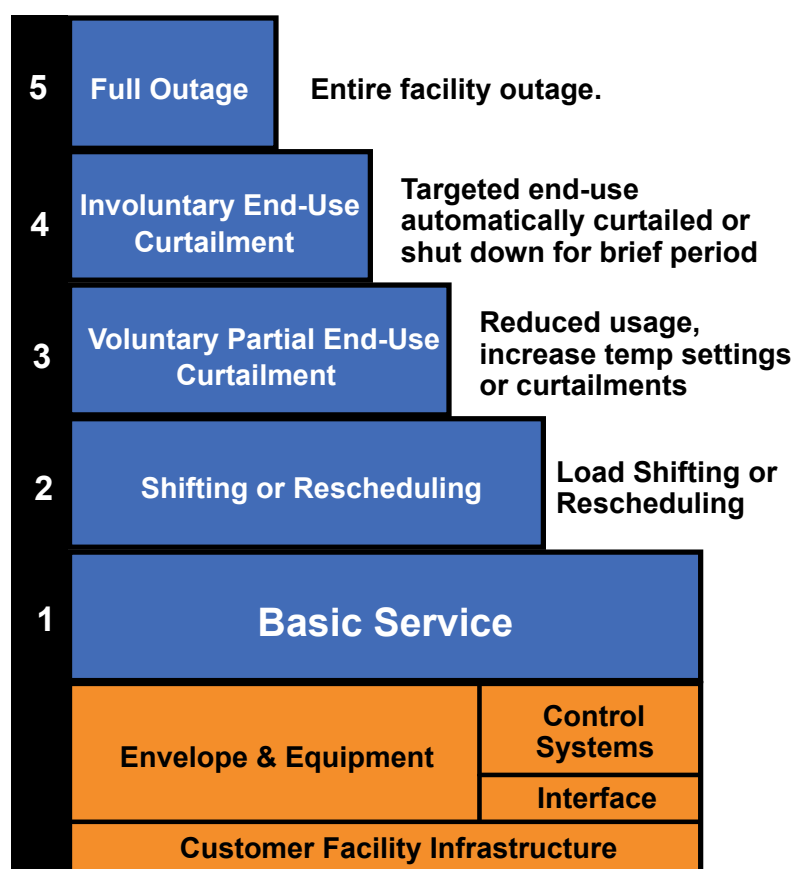


Figure 1. Customer perspective of demand response.

DRRC Initiates Critical Research Projects

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Incentives and Rate Design for Efficiency and Demand Response

In October 2005, the Demand Response Research Center awarded contracts to Christensen Associates Energy Consulting, and Energy and Environmental Economics, Inc. (E3) for Phase 1 of a two-phase research effort titled “*Incentives and Rate Design for Efficiency and Demand Response*.” Both firms will perform the same set of tasks and essentially compete to see which firm moves on to the Phase 2 methodology development effort.

Historically, utilities have not integrated DR incentives into the basic customer rate, preferring instead to pay for DR participation rather than link incentives to customer performance. Incorporating DR incentives into the underlying rate would require revised rate designs, regulatory proceedings and public hearings. Performance-based rates also would necessitate advanced metering and communication systems to capture the appropriate billing metrics and changes in customer usage. Because participation incentives are less expensive to administer than advanced meters, they prevailed and have since become the default industry standard for small customers.

While separate participation incentives and add-on rate adjustments may have had a logical basis when DR was first introduced, the lack of integration with the customer’s basic retail rate is now a major cause for concern. Incentives that pay for participation rather than performance create equity problems, build in recurring utility incentive expense unrelated to DR operations, and often complicate customer education.

The “*Incentives and Rate Design for Efficiency and Demand Response*” research effort will seek development of a framework and prototypical rate designs for translating the value of demand response into clear, understandable incentives or price signals that link energy markets and utilities with their customers. Presenting customers with rates and incentives that integrate efficiency and demand response is expected to simplify customer operating and energy investment practices and substantially increase long-term load and energy impacts.

A more comprehensive discussion of the issues and objectives for this project can be found in an issue paper included in the Research Opportunity Notice used as the basis for the competitive proposal process. A copy of this issue paper, titled “*Incentives and Rate Design for Efficiency and Demand Response*,” can be found on the DRRC web site at http://drcc.lbl.gov/pubs/DRRC-02_FINAL.pdf. ■

Status Update on DRRC Research Projects

On January 31st, 2006 the DRRC hosted a day long session at the Pacific Energy Center in San Francisco to review the Phase 1 interim reports and proposed Phase 2 research plans from two critical research projects. During the morning session, project team members from Energy and Environmental Economics, Inc. (E3) and Summit Blue presented summaries of their independent reports on “*Establishing the Value of Demand Response*”. During the afternoon session, Christensen and E3 presented their reports on Rates and Incentives to Integrate Efficiency and Demand Response. Approximately 50 utility, regulatory, and consumer representatives including 17 Technical Advisory Group (TAG) members, participated in reviewing these reports.

The final revised versions of each of the consultant reports will be delivered to the DRRC by March 15, 2006. Negotiations are currently underway within the DRRC and with each of the consultants to define the Phase 2 development projects. ■

Collaboration Opportunity

See page 9 for how you can partner with the DRRC on the Center’s research efforts.

DRRC Collaboration Opportunities

Although the Demand Response Research Center's (DRRC) primary focus is to conduct and disseminate near-term research that advances demand response (DR) in California, many of the issues and problems that we face are common to utilities, regulators and service providers everywhere. The two DRRC research projects on rates and incentives, and valuing demand response (described elsewhere in this newsletter), illustrate the commonality of DR problems in California with other jurisdictions.

When the DRRC was established, there was clear recognition that solutions to DR problems would often require multi-institutional and collaborative relationships. Two of the DRRC's five principal objectives emphasize this fact. As a result, many of the DRRC's research projects have been structured to encourage collaboration and outside participation on several levels:

- **Technical Advisory Groups (TAG)**—Each DRRC research project includes a TAG with 6 to 12 expert practitioners drawn from utility, regulatory, customer, and industry groups nationwide. TAGs can play a key role in numerous activities such as evaluating research proposals, providing feedback on related work, linking research results with the marketplace, providing technical guidance to researchers, and evaluating research products.
- **Financial Collaboration with the DRRC**—While the DRRC establishes a budget for each research project, the scope is often tailored to address California-specific interests and product needs. The DRRC encourages joint funding where opportunities exist to broaden or improve the research effort. Projects addressing conceptual or product issues outside the immediate interests of California will also be considered, especially when they address potential long-term DR concerns more fully. Collaboration with the DRRC will often provide the ability to directly influence the project scope, objectives, tasks, and schedule.
- **DRRC Financial Collaboration with Other Organizations**—The DRRC is also interested in leveraging its research dollars by collaborating on other institutional research projects. Our areas of interest are outlined in the DRRC research plan which can be located on the DRRC web site.

Examples of existing DRRC collaboration efforts include:

- **Pacific Gas & Electric (PG&E)**—CPP pilot of Automated Demand Response.
- **Southern California Edison (SCE)**—Thermal mass project.
- **Electric Power Research Institute Solutions**—analysis of Auto-DR.
- **Demand Response Coordinating Committee (DRCC)**—participation in International Energy Agency DR efforts.
- **U.S. Department Of Energy (DOE)**—Evaluating links between advanced controls for energy efficiency and DR.
- **New York State Energy Research and Development Authority (NYSERDA)**—Evaluating DR strategies in new building projects (New York Times building). ■

If you are interested in pursuing collaborative research efforts with the DRRC, contact:

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510-486-6286
- Roger Levy
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**"...DRRC's
research
projects have
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participation..."**

DRRC Creates Research Roadmap for California

The Demand Response Research Center (DRRC) was created by the California Energy Commission (CEC) in 2004. It is charged with conducting and disseminating near-term research that advances the multi-institutional needs for demand response in California. Key stakeholders include the California Energy Commission, Public Utility Commission, ISO, investor and municipal utilities, consumer groups, trade associations, technology providers and other research organizations. DRRC objectives are to create a research roadmap for Demand Response in California, establish multi-institutional partnerships, foster collaborative relationships with other organizations and institutions, provide a long-term focus to DR research topics, and conduct research, development, demonstrations and technology transfer

In December 2004, the DRRC convened a panel of 21 California and national experts from utility, government, regulatory, consulting and other organizations to help provide an informed perspective on demand response problems and opportunities. In a two day planning session, the expert panel addressed six fundamental problems with demand response research and implementation activities, including the definition of demand response, market models, and the role of customers in utility programs. Demand response policies, valuation, technology and customer behavior were also addressed. The Scoping Study Roundtable Report, published in April 2005, summarized the results of the expert panel sessions and provided the foundation for the DRRC research plan.

With the guidance of a Partner Planning Committee, the DRRC identified and prioritized eight research topics. The two highest priority topics, highlighted in the accompanying exhibit, were released for public comment in July 2005. As a result of a competitive process, research contracts for each project were awarded in October 2005.

In an effort to push the boundaries on demand response research, the DRRC took an innovative approach to these baseline projects. Two contracts were awarded for each project. Each contractor will perform the same set of tasks, culminating in the presentation of a Phase 1 Report in January 2006 before a nationally representative Technical Advisory Group. The quality, responsiveness and insight of their Phase 1 product will



determine who is awarded a Phase 2 development and implementation contract.

Companion articles on the adjoining pages provide more information on each of these initial DRRC research projects. Information is also provide to describe how your organization can participate in both the Phase 2 development and implementation efforts as well as other DRRC research efforts. ■

To learn more about the DRRC, visit our web page at <http://drcc.lbl.gov/drcc-bg.html>

About the DRRC

The Demand Response Research Center is operated by Lawrence Berkeley National Laboratory for the California Energy Commission's Public Interest Energy Research Program (PIER). The Energy Commission created the DRRC in 2004 to develop, prioritize, conduct, and disseminate research that develops broad knowledge with the aim of facilitating the near-term adoption of DR technologies, policies, programs, strategies and practices, while ensuring that the research continues to be connected with the DR market and policy makers through substantial stakeholder input.

Acknowledgment

The work described in this report was coordinated by the Demand Response Research Center and funded by the California Energy Commission, Public Interest Energy Research Program, under Work for Others Contract No. 500-03-026 and by the U.S. Department of Energy under Contract No. DE-AC02-05CH11231.

Disclaimer

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DRRC Research Projects

Current DRRC research projects include:

- Automated Demand Response
- Programs and Tariffs for Demand Response
- Demand Shifting with Thermal Mass
- Scoping Studies (Demand-Responsive Lighting, Indoor Air Quality Impacts of Load Shedding, Demand Response Behavior, Water TOU Tariffs and Demand Response)
- Research Opportunity Notices:
 - Establish the Value of Demand Response
 - Incentives and Rate Design for Efficiency and Demand Response

See the projects menu of drcc.lbl.gov for more information.